

WE CLAIM:



- Sub C1
1. A leadframe for use with packaged integrated circuit chips comprising:
 - a plated layer of gold selectively covering segments of said leadframe external to said package, intended for solder attachment.
 2. A leadframe for use with packaged integrated circuit chips, having a chip mount pad and a plurality of lead segments, comprising:
 - a leadframe base made of copper or copper alloy;
 - a first layer of nickel deposited on said copper or copper alloy;
 - a layer of an alloy of nickel and palladium on said first nickel layer;
 - a second layer of nickel on said alloy layer, said second nickel layer deposited to be suitable for bending of said lead segments, wire bonding, and solder attachment;
 - a layer of palladium, said palladium layer deposited to be suitable for protecting the nickel surface for wire bonding and solderability, and for adhesion to molding compound; and
 - a layer of gold selectively covering portions of said lead segments external to said package, intended for solder attachment.
 3. The leadframe according to Claim 2 wherein said gold layer has a thickness in the range from 2 to 5 nm.
 4. The leadframe according to Claim 2 wherein said first nickel layer has a thickness in the range from 50 to 150 nm.
 5. The leadframe according to Claim 2 wherein said alloy layer has a thickness in the range from 50 to 150 nm.
 6. The leadframe according to Claim 2 wherein said second nickel layer has a thickness in the range from 1000 to

3000 nm.

7. The leadframe according to Claim 2 wherein said palladium layer has a thickness in the range from 25 to 75 nm.
 8. The leadframe according to Claim 2 wherein said copper or copper alloy base has a thickness between about 100 and 250 μm .
 9. The leadframe according to Claim 2 wherein said solder attachment comprises solder materials selected from a group consisting of tin/lead, tin/indium, tin/silver, tin/bismuth, and conductive adhesive compounds.
 10. The leadframe according to Claim 1 wherein said leadframe comprises an iron-nickel alloy or invar base, selectively plated with gold.
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11. A packaged semiconductor device comprising:
a leadframe comprising a chip mount pad for an integrated circuit chip and a plurality of lead segments having their first end near said mount pad and their second end remote from said mount pad;
said leadframe having a first surface layer of nickel, a layer of an alloy of nickel and palladium, a second layer of nickel, and a layer of palladium;
said leadframe further having an outermost layer of gold selectively covering portions of said second ends of said lead segments external to said package, in a thickness suitable to optimize solder attachment;
an integrated circuit chip attached to said mount pad; and
bonding wires interconnecting said chip and said first ends of said lead segments.
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12. The device according to Claim 11 wherein said bonding wires are selected from a group consisting of gold, copper, aluminum and alloys thereof.

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C2

13. The device according to Claim 11 wherein the bonding wire contacts to said first ends of said lead segments comprise welds made by ball bonds, stitch bonds, or wedge bonds.
15. The device according to Claim 11 further comprising lead segments having said second ends bent, whereby said segments obtain a form suitable for solder attachment.
16. A method for fabricating a leadframe comprising a chip mount pad and a plurality of lead segments having their first end near said mount pad and their second end remote from said mount pad, comprising the steps of selectively making said chip pad and said first segment ends, thereby leaving said second segment ends exposed; and
plating a layer of gold on said exposed segment ends in a thickness suitable to optimize solder attachment, thereby creating a visual distinction between the gold-plated and unplated leadframe areas.
17. A method for fabricating a leadframe comprising the steps of: